

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1-4. (Canceled)

5. (Currently amended) An isolated nucleic acid encoding a polypeptide having at least 95% amino acid sequence identity with a polypeptide selected from the group consisting of:

- (a) a CatSper3 protein having CatSper3 activity in a cell capable of expressing CatSper3 activity;
  - (b) at least a transmembrane domain of a CatSper3 protein;
  - (c) at least an extracellular loop of a CatSper3 protein; and
  - (d) at least a pore region of a CatSper3 protein; [[and]]
  - ~~(e) at least 4 consecutive amino acids of a CatSper 3 protein;~~
- wherein said CatSper3 protein is encoded by SEQ ID NO: 1 or SEQ ID NO: 3.

6-74. (Canceled)

75. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with a CatSper3 protein of SEQ ID NO: 1 having CatSper3 activity in a cell capable of expressing CatSper3 activity.

76. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with a CatSper3 protein of SEQ ID NO: 3 having CatSper3 activity in a cell capable of expressing CatSper3 activity.

77. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with at least a transmembrane domain of a CatSper3 protein of SEQ ID NO: 1.

78. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with at least a transmembrane domain of a CatSper3 protein of SEQ ID NO: 3.

79. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with at least an extracellular loop of a CatSper3 protein of SEQ ID NO: 1.

80. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with at least an extracellular loop of a CatSper3 protein of SEQ ID NO: 3.

81. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with at least a pore region of a CatSper3 protein of SEQ ID NO: 1.

82. (New) The isolated nucleic acid of claim 5, wherein said isolated nucleic acid encodes a polypeptide having at least 95% amino acid sequence identity with at least a pore region of a CatSper3 protein of SEQ ID NO: 3.

83. (New) An isolated nucleic acid comprising at least 14 consecutive nucleotides of SEQ ID NO: 1.

84. (New) The isolated nucleic acid of claim 83, wherein said isolated nucleic acid comprises at least 15 consecutive nucleotides of SEQ ID NO: 1

85. (New) The isolated nucleic acid of claim 84, wherein said isolated nucleic acid comprises at least 16 consecutive nucleotides of SEQ ID NO: 1.

86. (New) The isolated nucleic acid of claim 85, wherein said isolated nucleic acid comprises at least 18 consecutive nucleotides of SEQ ID NO: 1.

87. (New) An isolated nucleic acid comprising at least 14 consecutive nucleotides that encode a portion of SEQ ID NO: 3.

88. (New) The isolated nucleic acid of claim 87, wherein said isolated nucleic acid comprises at least 15 consecutive nucleotides that encode a portion of SEQ ID NO: 3.

89. (New) The isolated nucleic acid of claim 88, wherein said isolated nucleic acid comprises at least 16 consecutive nucleotides that encode a portion of SEQ ID NO: 3.

90. (New) The isolated nucleic acid of claim 89, wherein said isolated nucleic acid comprises at least 18 consecutive nucleotides that encode a portion of SEQ ID NO: 3.